



Chapter 3

Impact of Socioscientific Issues on Middle School Students' Character and Values for Global Citizenship

Wardell A. Powell

 <https://orcid.org/0000-0002-3486-2077>
Framingham State University, USA

Mark H. Newton

 <https://orcid.org/0000-0002-3616-319X>
East Carolina University, USA

Dana L. Zeidler

University of South Florida, USA

ABSTRACT

This chapter demonstrates the impact of an animal cloning socioscientific issues instructional unit on a group of middle school students' abilities to use their ecological worldview, social and moral compassion, and sense of socioscientific accountability to determine the permissibility of animal cloning. Seventy-seven 7th grade students at a public middle school in the Southeastern region of the United States participated in this investigation. Results from a non-parametric two-tailed Wilcoxon test indicated the students' social and moral compassion ($Z = -2.505$, $p = .012$) and socioscientific accountability scores ($Z = -2.381$, $p = .017$). In contrast, the results did not demonstrate a statistically significant difference between students' pre and post ecological worldview ($Z = -1.185$, $p = .236$). Qualitative analyses of the data revealed several interesting trends and themes discussed in the chapter. The findings from this investigation support the use of SSI as key pedagogical strategies in promoting character and values for global citizens among middle school students. DOI: 10.4018/978-1-7998-4558-4.ch003

INTRODUCTION

A perennial goal of science education is to develop students with the capacity to contribute to the resolution of contentious issues in socially and environmentally sustainable manner. This aim is evident in the global recommendations for science education (Lead States, 2013; UNESCO, 2019). This mission is paramount in helping students to act responsibly when confronted with opportunities to support social justice movements aimed at preserving the environment and supporting others in need. Citizens are expected to make decisions on the environment, our health, and the safety of others, whether through engagement in the democratic process or through direct decisions based upon their employment in today's society, which has been deemed functional scientific literacy (Zeidler, 2003). Making informed decisions requires careful examination of data in order to evaluate evidence. Studies that examined the types of evidence that are essential in the evaluation of controversial issues have reported that participants made fewer requests about the research findings, who conducted the research, and where the research was conducted (Korpan, Bisanz, & Henderson, 1997). This finding is troubling in light of calls from researchers for students to exhibit skepticism to carefully evaluate information that is potentially biased (Sadler, 2007; Sadler, et al., 2011). Equally troubling are reports that students tend to accept information without evaluation of evidence (Owens, Sadler, & Zeidler, 2017; Ratcliffe, 1999). At a time when policy-makers can ignore a city's water contamination in the United States as in the case of Flint, Michigan, when lawmakers deny climate change (Fisher, Waggle, & Leifeld, 2012; McCright & Dunlap, 2011), or when lives are endangered due to where natural gas pipelines are erected (Brito, de Almedia, & Mota, 2009; Sklavounos & Rigas, 2006), it is critical for students to learn to think for themselves, evaluate evidence, and make appropriate and informed decisions. The acceptance of claims without evaluation only adds to the difficulty of making informed decisions.

The spread of COVID-19 around the world is a case in point of why students in general, and the public in particular need to be able to make informed decisions on scientific phenomena. During the midst of the pandemic, we have seen regular citizens, faith-based leaders, and politicians make egregious claims based on feelings and ideology, rather than on known scientific facts. Some who heeded to these false claims paid the ultimate price with their life. For example, many pastors and politicians in the United States down played the threats COVID-19 pose. They encouraged their followers to ignore the social distancing guidelines that were initiated by members of the scientific community. Some who followed this ill-fated advice made the ultimate sacrifice by losing their life to the virus. Such a blatant lack of respect for science and what it has to offer must not become commonplace in our society, because science matters, and scientific knowledge is imperative.

34 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/impact-of-socioscientific-issues-on-middle-school-students-character-and-values-for-global-citizenship/261672

Related Content

Problem-Based Learning Classroom Models in Higher Education

(2022). *Guide to Integrating Problem-Based Learning Programs in Higher Education Classrooms: Design, Implementation, and Evaluation* (pp. 109-130).

www.irma-international.org/chapter/problem-based-learning-classroom-models-in-higher-education/307616

Understanding Intergenerational Communication at Schools

Tuba Konaklı (2023). *Perspectives on Empowering Intergenerational Relations in Educational Organizations* (pp. 188-208).

www.irma-international.org/chapter/understanding-intergenerational-communication-at-schools/332388

Technostress Among Higher Education Students During the COVID-19 Outbreak

Osvaldo Dias Lopes da Silva, Áurea Sandra Toledo de Sousa and Ana Isabel Damião de Serpa Arruda Moniz (2022). *International Journal of Online Pedagogy and Course Design* (pp. 1-12).

www.irma-international.org/article/technostress-among-higher-education-students-during-the-covid-19-outbreak/305726

Effective eLearning and Transformative Pedagogical Strategies: STEM Programs

Daniel W. Keebler and Jessica Huffman (2020). *International Journal of Online Pedagogy and Course Design* (pp. 61-70).

www.irma-international.org/article/effective-elearning-and-transformative-pedagogical-strategies/248016

TILTING Assignments in In-Major Undergraduate Courses

Rod McRae, Katherine B. Green and Jamie Brandenburg (2022). *Integrating Transparency in Learning and Teaching (TILT): An Effective Tool for Providing Equitable Opportunity in Higher Education* (pp. 68-93).

www.irma-international.org/chapter/tilting-assignments-in-in-major-undergraduate-courses/306614